

Session No. 9

Course Title: Social Dimensions of Disaster, 2nd edition

Session 9: Understanding Disaster Warnings

1 hr.

Objectives:

- 9.1 Describe disaster warnings as a social process
- 9.2 Identify and illustrate three social factors that constrain disaster warning responses
- 9.3 Identify five elements of content required in effective warning messages
- 9.4 Describe two key aspects of modal disaster warning responses
- 9.5 Identify at least three future key research needs related to disaster warnings
- 9.6 Demonstrate an ability to prepare an effective warning message.

Scope:

This session introduces students to the disaster warning process, social factors that constrain responses, modal and response patterns, future research needs, and the elements of content required in effective messages.

Readings:

Student Reading:

Drabek, Thomas E. 2000. "The Social Factors that Constrain Human Responses to Flood Warnings." Pp. 361-376 in *Floods* (Vol. 1) edited by Dennis J. Parker, London: Routledge.

Professor Readings:

Pfister, Neil. 2002. "Community Response to Flood Warnings: The Case of an Evacuation from Grafton, March 2001." *Australian Journal of Emergency Management* 17:19-29.

Floroiu, Ruxandra and Richard T. Sylves. 2003. *Alerting America: Effective Risk Communication: Summary of a Forum October 31, 2002*. Washington, D.C.: National Academies Press.

King, David and Douglas Goudie. 1997-1998. "Breaking through the Disbelief: The March 1997 Flood at Concurry . . . 'Even the Duck Swam Away'." *Australian Journal of Emergency Management* 12:29-33.

Drabek, Thomas E. 2000-2001. "Understanding Employee Responses to Disaster." *Australian Journal of Emergency Management* 15:15-21.

Background References:

Lindell, Michael K. and Ronald W. Perry. 1992. *Behavioral Foundations of Community Emergency Planning*. Washington, D.C.: Hemisphere Publishing Company. (See Chapter 7 entitled "Warning Reception and Response", pp. 183-214).

Drabek, Thomas E. 1994. *Disaster Evacuation and the Tourist Industry*. Boulder, Colorado: Institute of Behavioral Science, University of Colorado.

General Requirements:

Student Handouts (9-1 and 9-2 appended).

Overheads (9-1 through 9-7 appended).

See individual requirements for each objective.

Objective 9.1 Describe disaster warnings as a social process.

Requirements:

Start this session with the student exercise and proceed with lecture material specified below.

Use Overheads 9-1 and 9-2.

Use Student Handouts 9-1 and 9-2.

Remarks:

I. Introduction.

A. **Exercise.**

1. **Remind** students of exercise procedures.
2. **Divide** class into four groups and assign student roles.
 - a. Chair.
 - b. Reporter.
 - c. Timer.
3. Announce time limit: 10 minutes.

B. Display Overhead 9-1; “Workshop Tasks”.

1. Group 1 – Identify and illustrate six social factors that constrain responses to disaster warnings.
2. Group 2 – Describe three future research needs relevant to disaster warnings and outline an approach for one empirically based research study.
3. Group 3 – Prepare a warning message in accordance with Case Study No. 1.
4. Group 4 – Prepare a warning message in accordance with Case Study No. 2.

C. Distribute Student Handout 9-1; “Disaster Warning Message Exercise Case Study No. 1” to the Chair of Group 3 and Student Handout 9-2; “Disaster Warning Message Exercise Case Study No. 2” to the Chair of Group 4.

D. Start discussion.

E. Stop discussion.

II. Disaster warnings as social processes.

A. Announce that workshop reports will be given through the session as relevant.

B. Display Overhead 9-2; “Disaster Warnings as Social Processes.”

C. Review and **illustrate** points listed.

1. **Variations** in perception.

- a. Same message.
 - b. Different people select different points.
2. **Disbelief** is initial response.
- a. **Example:** Grafton, New South Wales, Australia (Pfister 2002).
 - 1) Officials alerted 12,000 residents and urged evacuation; fewer than 10 percent evacuated (p. 19).
 - 2) Follow-up survey indicated: “Three quarters of the survey respondents who did not evacuate believed that they were not under threat.” (p. 23).
 - b. **Example:** Cloncurry, Queensland, Australia (King and Goudie 1997-1998).
 - 1) Drought followed by heavy rains caused flood threat and official evacuation advisories (p. 29).
 - 2) “A 67-year-old local would not take precautionary measures until the water was at his home, because he *knew the flood water* would not come as high as it *did*.” (italics in original, p. 29).
 - 3) “The dominant response was disbelief. The flood waters came 2 meters higher than any previous recorded flood.” (p. 30).
3. **Variations** in second stage responses.
- a. Some look for more information, e.g., dial flip or channel change.
 - b. Some search environmental cues.
 - c. Some contact others, e.g., telephone relative.
 - d. Some ignore.
4. **Social constraints.**
- a. Analysis reflects “emergent norm theory” and “bounded rationality” theory (see Drabek 2001, p. 15).

- b. Researchers using both of these perspectives emphasize **sequences** of **choices** people make.
 - c. Researchers emphasize **past experiences** shape world views, e.g., some people see more **choices** and **options** than others.
 - d. How disaster warning **messages are perceived** reflects many types of social factors.
 - e. Social factors, like gender, **constrain** perceptions of all information including disaster warning messages.
5. **Cycles within cycles**; feedback loops.
- a. People learn of a hazard, make assessments, obtain new information, decide to search elsewhere for more information, revise earlier assessments.
 - b. Feedback loops, e.g., as additional information is received, prior decisions about threat severity are revised.
6. **Five criteria** affect evaluations of disaster warning messages.
- a. **Ambiguity** (Is the message clear?)
 - b. **Certainty** (Is it certain the threat will impact?)
 - c. **Magnitude** (How large is the predicted impact?)
 - d. **Timing** (How soon will it hit?)
 - e. **Location** (Where will impact occur? Will it hit me?)
7. **Modal warning sources**: Example study (Lindell and Perry 1992, p. 186).
- a. **Events**:
 - 1) Mount St. Helens, Washington – volcano.
 - 2) Abilene, Texas – flood.
 - 3) Mt. Vernon, Washington – hazardous materials incident.

4) Denver, Colorado – hazardous materials incident.

b. **Warning sources:** (high and low percentages listed; other cases were in between these levels)

1) Authorities – 37% Mt. Vernon; 3% Mount St. Helens.

2) Observation of impact – 21% Mount St. Helens; 0% in all other cases.

3) Mass media – 48% - Abilene; 18% - Denver.

4) Peers – 58% - Denver; 22% Abilene.

Supplemental Considerations:

The two key messages of this section are: 1) disaster warning are **complex social processes**, and 2) **disbelief** is the modal initial response. Required reading documents both lessons, but lecture and examples are required to reinforce these basic principles. Some professors may wish to integrate concepts from the risk communication literature into this section by reviewing material presented in Session No. 41 (“What Works In Risk Communication?”). See also the summary by Floroiu and Sylves 2003.

Objective 9.2 Identify and illustrate three social factors that constrain disaster warning responses.

Requirements:

Use Overhead 9-3.

Remarks:

I. Social factors as constraint.

A. **Examples** of social factors.

1. Age.

2. Ethnicity.

B. **Explain** constraint.

1. All people make choices.

2. Age, ethnicity, gender, etc. limit individual's types of **experiences** and the **range of options** they perceive to be **available**.
 3. Behavior is constrained, **not** determined.
- II. Group 1 report (5 minutes).
- III. Social factors as constraints.
- A. **Display** Overhead 9-3; "Disaster Warnings: Social Factors as Constraints."
 - B. **Review** topics **as required** to illustrate and augment Group 1 report.
 - C. **Message characteristics.**
 1. Source.
 2. Clarity.
 3. Consistency.
 4. Precision.
 5. Repetition.
 6. Confirmation.
 - D. **Receiver characteristics.**
 1. Risk perception.
 2. Gender.
 3. Ethnic minority.
 4. Socio-economic status.
 5. Fate control.
 - a. Extent to which events are viewed as being **beyond** individual **control**.
 - b. **Extensive** research base, e.g., Sims and Baumann 1972; Perry and Greene 1982; Perry 1985.

- c. **Fatalistic** orientation or higher external control orientation are **less likely to believe** disaster warnings or **evacuate**.

E. **Contextual qualities.**

1. Social group composition.
2. Family physically separated.
 - a. **Children** at school.
 - b. **Single parent** family, parent at work.
3. Away from home.
 - a. **Tourists**.
 - b. **Business travelers**.
 - c. Drabek (1996) research demonstrated parallels to residential populations, **except** transient populations reported less clear understanding of message meanings.

Supplemental Considerations:

Depending on the quality of the group report, this section could go very **quickly**. Some professors may prefer, however, to elaborate through additional **illustrations** to insure complete student understanding of these **essential** principles. Also, the documentation of these core research findings could be related to disaster myths and the usefulness of empirical research to emergency managers and social policy guidance.

Objective 9.3 Identify five elements of content required in effective warning messages.

Requirements:

Use Overhead 9-3.

Remarks:

- I. Ineffective warning messages.
 - A. **Poorly written** messages are common.
 - B. **Victims** may be **blamed** for not evacuating.

- C. All elements of ambiguity, inconsistency, etc. **reinforce** disbelief.
 - D. People **actively search** for information that will allow them to reduce the threat potential.
- II. Seven key message qualities.
- A. **Refer** students to assigned reading, i.e., Drabek 2000, p. 364.
 - B. **Display** Overhead 9-4; “Effective Messages.”
 - C. **Review** and illustrate.
 - 1. Credible source.
 - 2. Official source.
 - 3. Clear content.
 - 4. Consistent messages.
 - 5. Precise content.
 - 6. Repetition.
 - 7. Confirmed.

Supplemental Considerations:

Some professors may wish to elaborate on this section by incorporating **recent examples** of warnings issued prior to a flood, tornado, wild fire or the like. Others may wish to discuss such matters as the **terrorist warning alert system** issued by the Department of Homeland Security (see Session 5: “Terrorism: Changing Threat Perceptions and Response Preparedness”; Section 5.8, I.C.5. entitled “Established the ‘Homeland Security Advisory System’”). The **key** message, however, is that when emergency officials issue warning messages lacking in any of these criteria, **non-compliance** can be expected.

Objective 9.4 Describe two key aspects of modal disaster warning responses.

Requirements:

Use Overhead 9-5.

Remarks:

- I. Modal warning responses.
 - A. **Display** Overhead 9-5; “Modal Warning Responses”.
 - B. **Refer** students to assigned reading, i.e., Drabek 2000, pp. 367-371.
 - C. **Review** topics on overhead and ask students to illustrate each.
 - D. **Disbelief**.
 - E. **Message confirmation**.
 - 1. Multiple modes, e.g., dial flipping on radio, phone a relative.
 - 2. Variation in information obtained.
 - F. **Evacuation pathways**.
 - 1. Default (e.g., confirmation action results in unplanned evacuation).
 - 2. Invitation (e.g., relative telephones).
 - 3. Compromise (e.g., husband gives in to wife’s plea to leave).
 - 4. Decision (e.g., both adults agree to leave).
 - G. **Departure patterns**.
 - 1. Most drive, e.g., Lindell and Perry 1992, p. 258; 73 percent drove family vehicle.
 - 2. When does departure occur?
 - a. Perceived threat is high.
 - b. Length of forewarning is short.
 - c. Most people delay as long as possible.
 - d. Drabek (2001, p. 16) documented that those employees who evacuated most quickly from their work place:
 - 1) Confronted events with a lengthy duration of impact.
 - 2) Had bosses with high future risk perceptions.

- 3) Were female.
3. Social constraints, e.g., Drabek 1994, p. 199.
 - a. Study of tourist business executives.
 - b. Seven factors constrained evacuation decision i.e., “high” on each factor led to more rapid evacuation.
 - 1) **DEP index** (measure of extent of disaster preparedness activities, e.g., written plan, annual exercise).
 - 2) **More message sources.**
 - 3) CEO was a **member** of **more** professional organizations.
 - 4) **Greater vertical complexity** of firm.
 - 5) **Organizational mission** (e.g., lodging, restaurant only, entertainment-retail or travel) (lodging firms evacuated more quickly).
 - 6) **High level of CEO risk perception.**
 - 7) **Intra-organizational** factors (e.g., evacuation planning required by parent company resulted in quicker evacuations).

H. Refuge sites.

1. Relative home (most common).
2. Friend’s home.
3. Private firm.
4. Public shelter.
5. Other (e.g., use recreational vehicle or camper).

Supplemental Considerations:

By referencing the assigned reading, some professors may choose to treat this section very briefly. Others will engage students by **asking for illustrations** of each of the

topics listed on the overhead. Still others may wish to **enrich** the section through supplemental examples of all topics that are not described in the reading assigned. The **key message** is that there are modal disaster warning response patterns. More **depth** could be added through discussion of warnings with differing degrees of forewarning or potential impact intensity. As these and other qualities vary, the modal patterns shift.

Objective 9.5 Identify at least three future key research needs related to disaster warnings.

Requirements:

Use Overhead 9-6.

Remarks:

- I. Group 2 Report (5 minutes).
- II. Research needs.
 - A. Display Overhead 9-6; “Disaster Warnings: Future Research Needs.”
 - B. **Review** topics as required to illustrate and augment Group 2 report.
 - C. **Research Topics.**
 1. **Comparative studies.**
 - a. Cross-disaster agent studies.
 - b. Length of forewarning studies.
 - c. Cross-national studies.
 - d. External validity studies.
 - 1) Refer students to discussion in assigned reading, i.e., Drabek 2000, pp. 361-362.
 - 2) External validity: To what population can the study findings be generalized?
 2. **Technology impacts.**
 - a. “Rear view mirror” issues.

b. Internet use.

3. **Evacuation policy.**

a. Community level versus regional.

b. Intergovernmental issues.

c. Special populations.

Supplemental considerations:

This section could be **expanded** depending on course context and professorial interest. Following Group 2 report, additional potential **study designs** could be discussed and critiqued by the class. Alternatively, as each research need area is illustrated an example study design could be proposed by the class and/or critiqued. The two **key messages** are: 1) current external validity **weaknesses** in the research base and 2) the enormous **range** of research needs requiring future researchers that must be trained and subsequently funded to **enhance** the emergency management knowledge base.

Objective 9.6 Demonstrate an ability to prepare an effective warning message.

Requirements:

Overheads 9-4 and 9-7.

Student Handouts 9-1 and 9-2.

Remarks:

- I. Group 3 report (2 minutes).
 - A. **Distribute** Student Handout 9-1; “Disaster Warning Message Exercise: Case Study No. 1” to remainder of the class.
 - B. **Ask students:** “What are the **strengths** and **weaknesses** of the warning message prepared by Group 3?”
 - C. **Display** Overhead 9-4; “Effective Messages.”
 - D. **Ask students:** “Which elements listed in this overhead **are reflected** in the warning message? (Group 3)”.
 - E. **Ask students:** “Which elements listed in this overhead are **missing** or inadequately reflected in the warning message (Group 3)?”

- F. **Ask Group 3 members:** “What information did you lack or wish to have that was **not provided** in the case example?”
- II. Group 4 report (2 minutes).
 - A. **Distribute** Student Handout 9-2; “Disaster Warning Message Exercise: Case Study No. 2” to the remainder of the class.
 - B. **Ask students:** “What are the strengths and weaknesses of the warning message prepared by Group 4?”
 - C. **Display** Overhead 9-4; “Effective Messages.”
 - D. **Ask students:** “Which elements listed in this overhead **are reflected** in the warning message (Group 4)?”
 - E. **Ask students:** “Which elements listed in this overhead are **missing** or inadequately reflected in the warning message (Group 4)?”
 - F. **Ask Group 4 members:** “What information did you lack or wish to have that was **not provided** in the case example?”
- III. Session Summary.
 - A. **Display** Overhead 9-7; “Session Summary.”
 - B. **Review** topics listed and elaborate as necessary to integrate the session topics.

Supplemental Considerations:

The student exercise could be **modified** in many ways and some professors may choose to **expand** the time for such exercises. Such expansions may **enhance** student understanding of the complexities and difficulties in preparing disaster warning messages. For example, all students might experience the **creative process** by adding one or two additional case examples. Once the group messages are prepared they could be reproduced quickly and distributed to the class for review. Alternatively, the messages could be **exchanged** by group and a critique could be prepared **within** the group context and then shared with the entire class, e.g., Group 1 critiques the message prepared by Group 2, and so on. However, the section might be designed, the **actual student experience** of message preparation should be incorporated.

Course Developer References:

- I. Drabek, Thomas E. 2000-2001. "Understanding Employee Responses to Disaster." *Australian Journal of Emergency Management* 15:15-21.
- II. Drabek, Thomas E. 2000. "The Social Factors that Constrain Human Responses to Flood Warnings." Pp. 361-376 in *Floods* (Vol. 1) edited by Dennis J. Parker. London: Routledge.
- III. Drabek, Thomas E. 1996. *Disaster Evacuation Behavior: Tourists and Other Transients*. Boulder, Colorado: Institute of Behavioral Science, University of Colorado.
- IV. Drabek, Thomas E. 1994. *Disaster Evacuation and the Tourist Industry*. Boulder, Colorado: Institute of Behavioral Science, University of Colorado.
- V. Floroiu, Ruxandra and Richard T. Sylves. 2003. *Alerting America: Effective Risk Communication: Summary of a Forum October 31, 2001*. Washington, D.C.: National Academies Press.
- VI. King, David and Douglas Goudie. 1997-1998. "Breaking through the Disbelief: the March 1997 Flood at Cloncurry . . . 'Even the Duck Swam Away'." *Australian Journal of Emergency Management* 12:29-33.
- VII. Lindell, Michael K. and Ronald W. Perry. 1992. *Behavioral Foundations of Community Emergency Planning*. Washington, D.C.: Hemisphere Publishing Company.
- VIII. Perry, Ronald W. and Marjorie R. Greene. 1982. "The Role of Ethnicity in the Emergency Decision-Making Process." *Sociological Inquiry* 52:306-334.
- IX. Pfister, Neil. 2002. "Community Response to Flood Warnings: the Case of an Evacuation from Grafton, March 2001." *Australian Journal of Emergency Management* 17:19-29.
- X. Sims, John H. and Duane D. Baumann. 1972. "The Tornado Threat: Coping Styles of the North and South." *Science* 176:1386-1392.